

## **PAYMENT PROCESSING WITH SELECTION OF A RISK REDUCTION TECHNIQUE**

### **RELATED APPLICATIONS**

**[0001]** This application is related to United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121), filed on **August 1, 2003**, 2003 and entitled "MULTIPLE DISTRIBUTED OPERATING ACCOUNTS"; United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121A), filed on **August 1, 2003**, 2003 and entitled "A TECHNIQUE FOR SELECTION OF A FINANCIAL INSTITUTION AT WHICH TO MAINTAIN AN OPERATING ACCOUNT"; United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121B), filed on **August 1, 2003**, 2003 and entitled "PAYMENT PROCESSING WITH SELECTION OF A PROCESSING PARAMETER"; United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121C), filed on **August 1, 2003**, 2003 and entitled "NEW PAYMENT PROCESSING PARAMETERS"; United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121E), filed on **August 1, 2003**, 2003 and entitled "PAYMENT PROCESSING WITH SELECTION OF AN ELECTRONIC DEBITING OPTION"; United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121F), filed on **August 1, 2003**, 2003 and entitled "PAYMENT PROCESSING WITH PAYEE RISK MANAGEMENT"; and United States Patent Application Serial No. \_\_/\_\_\_\_\_, (Attorney Docket No. 3350-0121G), filed on **August 1, 2003**, 2003 and entitled "DEBIT-CREDIT COMBINATION SELECTION."

## **FIELD OF THE INVENTION**

**[0002]** The present invention relates to electronic commerce, and more particularly to providing an electronic payment service.

## **BACKGROUND OF THE INVENTION**

**[0003]** An electronic payment service provider is an entity that provides the electronic commerce service of completing payment on behalf of a user of the electronic payment service of that service provider. The user on whose behalf a payment is completed is a payor, and an entity receiving the payment (often a biller) is a payee. An enrolled user of service provider is known as a subscriber of the service provider. A subscriber can be an individual, a business, or another type of organization.

**[0004]** A service provider receives a payment request electronically, either directly from subscriber, or from another entity acting on behalf of a subscriber. A payment request, at a minimum, specifies a payee, a payment amount, and a payment date. A payment request may be electronically originated at any one of several electronic user interfaces, including automated telephone system interfaces, Web-based interfaces, PC application-based interfaces, set-top box-based interfaces, ATM-based interfaces, PDA-based interfaces, and mobile phone-based interfaces. A payment request may also be originated by a server system on behalf of a payor.

**[0005]** After receipt of a payment request, a service provider processes the request to initiate payment processing. At the conclusion of payment processing the service provider issues remittance to the payee. Remittance is a combination of a credit to a payee and remittance advice associated with the credit.

**[0006]** A credit accomplishes a transfer of funds to a payee to fulfill a payment request. A credit may be performed through a paper process (check or draft), or an electronic funds transfer (EFT) process. The funds may come directly from a demand deposit account (DDA) associated with a subscriber, e.g., via a draft, or from a demand deposit account associated with the payment service provider. A demand deposit account could be a checking account, a money market account, or any other type financial account in which an account holder can access funds held therein at will. An electronic funds transfer is the process of causing funds to move between different financial accounts, perhaps at the same, or different financial institutions, across one or more networks. A financial institution (FI) is an entity that maintains financial accounts that can be debited and/or credited as a result of transaction activity. Financial institutions include banks, savings and loans, credit unions, and brokerage houses. Networks linking financial institutions, as well as other entities, include the Federal Reserve's Automated Clearinghouse (ACH) network.

**[0007]** The Federal Reserve System is the central bank of the United States of America, formed by an act of Congress. It consists of twelve Reserve Banks located in major cities throughout the United States. The ACH network electronically links the Federal Reserve Banks with financial institutions

throughout the United States to support electronic funds transfer between the financial institutions. MasterCard's RPPS network, Visa's ePay network, and Princeton eCom's network are examples of remittance networks, each of which links a service provider with one or more payees.

**[0008]** Remittance advice is a description of a credit that allows proper payment posting to a specific account, or sub-account, in a payee's Accounts Receivable ledger. Remittance advice may be tightly coupled with an instrument used to accomplish the credit (e.g., information printed in a memo field on a check or draft, or information included in a field in an electronic funds transfer file transmitted over a network linking financial institutions), or it may be somewhat decoupled from the credit, such as a paper document delivered to a payee, separate from a credit, or an electronic file transmitted directly to the payee separate from a credit. Remittance advice typically includes at least information identifying a payor, information identifying the payor's account with the payee, and a payment amount.

**[0009]** A managed payee is a payee about whom a service provider has information that enables remittance to that payee to be handled in some improved/optimal fashion. The information typically includes one or more account schemes for improved reliability of Accounts Receivable posting at the managed payee, account ranges for remittance center identification, other information for remittance center identification, payee preferred credit form (e.g., paper or electronic, specific syntax), payee preferred remittance advice form

(e.g., paper or electronic, specific syntax), and electronic links for delivery of electronic credits and/or electronic remittance advice.

**[0010]** Managed payee information, collected by a service provider from managed payees and/or other sources, is typically stored in a managed payee database. A managed payee database includes information identifying each managed payee known to a service provider, along with the information collected about each managed payee.

**[0011]** An electronic payee is a managed payee about whom a service provider maintains information enabling remittance to be issued electronically. An unmanaged payee is a payee about whom a service provider does not maintain information which aids in the handling of remittance. A merchant is a payee that issues bills for services rendered or goods purchased. Thus, a merchant is a special class of payee, a payee that issues bills. A merchant can be an unmanaged merchant, a managed merchant, or an electronic merchant (these terms are parallel in concept to unmanaged payee, managed payee, and electronic payee, respectively, as defined above)

**[0012]** For many service providers, payment processing dictates the form of remittance issued, i.e. electronic or paper. Some service providers use payment processing to determine a form of remittance based solely upon a status of a payee as a managed payee, with remittance issued in accordance with a managed payee's wishes. Thus, during payment processing, such a service provider determines if a payee identified in a payment request is a managed payee (or managed merchant). If so, information stored in a managed payee

database is retrieved and remittance is issued in accordance with the stored information. If the retrieved information indicates that remittance should be issued electronically, the remittance is issued accordingly. And, if the retrieved information indicates that remittance should be issued on paper (check or draft), the remittance is likewise issued accordingly.

**[0013]** If a payee is not determined to be a managed payee, remittance will typically be issued on paper. In these cases, some service providers automatically issue a check drawn on a demand deposit account associated with the payor, typically known as a draft, as the form of remittance. A draft is a special class of check, one prepared by an entity other than an account holder of the account upon which the draft is drawn. Still other payment service providers perform risk processing to determine whether paper remittance will be a corporate check, drawn on a demand deposit account associated with the service provider, or a draft.

**[0014]** In risk processing, a payment request is evaluated against a set of rules that determines whether the credit can be issued “at risk” to the electronic payment service provider. Risk processing can be performed, as desired by particular service providers, in association with payments to unmanaged payees and/or managed payees, including both electronic and non-electronic managed payees. Rules include payment amount, payment velocity, and aggregate payment amount limits. An “at risk” credit is a credit from an account belonging to a service provider. Risk processing is only performed in those instances where a service provider is not assured of receiving funds in at least an amount

of a payment made on behalf of a payor. If a determination is made that a payment will not be issued “at risk”, payment is made by a draft drawn on a payor’s demand deposit account prepared by a service provider.

**[0015]** A service provider can be assured of receiving funds in a “good funds” model of payment processing. In a good funds model, an electronic payment service provider performs a debit authorization against a payor’s demand deposit account before issuance of a credit. That is, an electronic payment service provider first assures that funds from a payor’s account are available before a credit is issued on behalf of that payor. If funds are not available, the credit is not issued. Some authorizations are performed asynchronously (in batch mode), while others are performed in real-time (e.g., ATM/POS debiting).

**[0016]** A service provider can also be assured of receiving funds in a “guaranteed funds” model of payment processing. In a guaranteed funds model, an entity other than a service provider commits to reimburse the service provider for any credits issued for which an associated debiting of a payor’s demand deposit account fails. The guaranteeing entity is typically the payee, although it may be another entity such as a consumer service provider, to be discussed further below, or a financial institution at which the payor’s demand deposit account is maintained. Other forms of risk processing will be described further below.

**[0017]** For other service providers, a status of a payee as a managed payee is but one factor considered in payment processing to determine a form of remittance. That is, payment is not automatically made in accordance with a

form of payment preferred by a managed payee. Some service providers perform risk processing to determine if an “at risk” credit will be issued.

**[0018]** Still other service providers perform account scheming to determine a form of payment. In account scheming, if an account number included in a payment request does not match a known account scheme utilized by the payee, payment is made by paper. Yet other service providers perform both risk processing and account scheming for electronic payees to determine a form of payment.

**[0019]** Typically, a service provider has five mechanisms to complete payment to a payee on behalf of a payor. As discussed above, selection of a mechanism to complete payment is often made during payment processing. The first is ACH-ACH payment, which is all electronic, in which a service provider transmits both the credit portion and the remittance advice portion of remittance onto the ACH network for delivery. The second is ACH-Direct Send payment, which is also all electronic, in which a service provider transmits the credit portion onto the ACH network, and transmits the remittance advice portion directly to a payee via a network different than the ACH. Alternatively, in some ACH-Direct Send payments, remittance advice is delivered to a payee in hard copy. The third is Third Party payment, which is also all electronic, in which a service provider transmits both the credit portion and the remittance advice portion on to a third party remittance network for delivery. The fourth is Corporate Check payment, which is paper, in which a service provider delivers a check to a payee, the check being drawn on a demand deposit account belonging to the service



provider. Remittance advice is printed upon the corporate check, or included therewith. The fifth is Draft payment, which also is paper, in which a service provider delivers a draft to a payee, the draft being drawn on a demand deposit account belonging to a payee and having remittance advice printed thereon, or included therewith. Consolidated payments can be made utilizing any payment mechanism other than draft. In consolidated payment a service provider makes payment to a single payee on behalf of multiple payors utilizing a single credit. The remittance advice associated with a consolidated payment identifies each payor in association with each payment amount.

**[0020]** An electronic biller is a biller that presents at least a subset of its bills, for at least a subset of its customers, electronically, either directly or through a biller service provider (BSP). A BSP is an entity that electronically presents bills to customers of an electronic biller on behalf of the electronic biller. A BSP can also be an electronic payment service provider. Such service providers are known as electronic billing and payment (EBP) service providers. Electronic bill presentment can be via any one of several electronic user interfaces, including Web-based interfaces, ATM-based interfaces, PC application-based interfaces, PDA-based interfaces, automated telephone system-based interfaces, mobile phone-based interfaces, and television set-top box-based interfaces.

**[0021]** Some service providers only make payments to a finite set of managed payees. These managed payees may or may not be electronic billers. Such payment service providers are said to offer a "closed" electronic payment service.

**[0022]** Still other service providers make payments to any payee, as long as the service provider knows the payee's name and address, typically obtained from a payor. Such service providers are said to offer an "open", or "pay anyone", electronic payment service. Of course, a payment to a payee that is not an electronic payee generally has to be a paper (check, draft, or other instrument) payment. Alternatively, the service provider may extend an invitation to the non-electronic payee to join its community of electronic managed payees, holding the payment until the payee joins, after which payment is released electronically. If the payee does not join, payment is either released as paper or returned.

**[0023]** The services offered by electronic payment service providers and EBP service providers have become widely accepted. Millions of bills are electronically presented to subscribers each month, and millions of payments are completed on behalf of subscribers each month. Many subscribers pay all of their bills and other obligations utilizing an electronic payment service provider or an EBP service provider. Thus, a service provider has become a central point of bill payment activity for these subscribers.

**[0024]** As will be appreciated by one of ordinary skill in the art, electronic funds transfer, whether viewed from a debit perspective or a credit perspective, is the most efficient form of funds transfer, both in terms of cost and speed. The costs associated with paper funds transfer, i.e., check or draft, include production, delivery, and handling costs. Electronic funds transfer does not have the same costs associated with paper funds transfer. Actual funds movement in

paper funds transfer takes a longer time than in electronic funds transfer. Because of the efficiencies of electronic funds transfer, service providers and payees each typically prefer electronic funds transfer to paper funds transfer.

**[0025]** Payment by draft, to overcome risk, obviously is not as efficient as electronic funds transfer. Good funds risk processing requires that a service provider have a relationship with a financial institution which maintains a payor's demand deposit account. Thus, the good funds model of risk processing, through which funds preferably move electronically, is only useful in a limited number of instances, those in which a service provider has a relationship with a payor's financial institution. Guaranteed funds risk processing requires that a service provider have a relationship with an entity that agrees to take on any risk incurred by the service provider, typically a payee. Thus, the guaranteed funds model of risk processing, also through which funds preferably move electronically, is also only useful in a limited number of instances, those in which a service provider is indemnified by a party other than the payor.

**[0026]** In an attempt to overcome the deficiencies of drafts, good funds risk processing, and guaranteed funds risk processing, a new model of risk processing has recently been proposed. This new model is known as the debit-hold-credit model of risk processing. In this model, an electronic funds transfer debit against a payor's demand deposit account is transmitted via the ACH network to a payor's financial institution, then, after a predetermined amount of time has passed, and no negative results associated with the debit are received,

an electronic funds transfer credit in favor of a payee's demand deposit account is transmitted onto the ACH network.

**[0027]** Limitations of the ACH network constrain how rapidly debits and credits can be accomplished. Currently, all interactions with the Federal Reserve System are accomplished through batch file transfers, after which individual requests are propagated from the Federal Reserve System to financial institutions through further batch file transfers. Thus, funds are not posted to accounts until at least the day after requests are initiated.

**[0028]** The ACH network is a "negative confirmation" network. That is, an originating entity never receives positive confirmation that a debit or credit request has been successfully completed. Rather, the originating entity only receives an "exception" when a debit or credit fails. A very high percentage (90+%) of exceptions are received within seventy-two hours. Thus a three-day hold period is typically utilized in the debit-hold-credit method. However, a risk still remains that some exceptions could be received after the three-day hold period.

**[0029]** Figure 1 is a transition diagram that shows the sequence of payment request, response, funds posting, and associated information flows in the context of a service provider that is completing both debits and credits electronically through the ACH network utilizing the debit-hold-credit model. In the example of Figure 1 a three-day hold period is assumed. Also in Figure 1, the credit to the payee is transmitted via the ACH network, and the remittance advice is transmitted directly to the payee. However, the credit, as well as the remittance

advice, could be transmitted via a third party network. Also, the remittance advice could be transmitted via the ACH network.

**[0030]** In Figure 1 axis 101 represents a payor, axis 103 represents a financial institution which maintains a DDA (axis 102) associated with the payor 101. Also, a service provider is represented by axis 104, a service provider DDA is represented by axis 106. The service provider DDA 106 is maintained at a financial institution 105. Axis 110 represents a payee, and axis 109 represents the payee's DDA maintained at a financial institution represented by axis 108.

**[0031]** On day 1 the service provider 104 receives a payment request from or on behalf of payor 101, communication 107. On this day the service provider 104 begins payment processing. It will be recognized that for future-dated payment requests payment processing does not start on the day the payment request is received. The service provider 104 transmits an electronic funds transfer file containing a debit instruction to debit the payor's account 102 in favor of the service provider account 106 via the ACH network, communication 111. This transmission could be directly to a Federal Reserve Bank, represented by axis 199, or through the service provider financial institution 105. The Federal Reserve Bank 199 then forwards the debit instruction to the payor's financial institution 103, communication 112.

**[0032]** In this example, on day 2 funds move from the payor's account 102 at the payor's financial institution 103 to the service provider's account 106 at the service provider's financial institution 105, shown at detail 113. If funds are not available in the payor's account 102 an exception would instead be delivered to

the service provider 104, typically by day 4, which is within → 72 hours of transmission of the electronic funds transfer file.

**[0033]** After the three-day hold period has elapsed, on day 4, the service provider 104 transmits an electronic funds transfer file containing a credit instruction to credit the payee's account 109 from the service provider account 106 via the ACH network, communication 114. This transmission could be directly to the Federal Reserve Bank 199, or via the service provider financial institution 105. The Federal Reserve Bank 199 then forwards the credit instruction to the payee's financial institution 108, communication 115. On day 5 funds move from the service provider's account 106 at the service provider's financial institution 105 to the payee's account 109 at the payee's financial institution 108, detail 116. Also on day 5, the service provider 104 directly delivers remittance advice to the payee 110, communication 117. Alternatively, remittance advice could be delivered on day 4, in anticipation of the funds movement on day 5.

**[0034]** This model shows a total elapsed time from initiation of payment processing to deposit of funds in the payee's account of five (business) days. This five days is close to the time it takes to pay a payee utilizing a draft. Thus, while this risk processing model utilizes electronic funds transfer, it does not markedly, if at all, improve the speed over which funds move in paper funds transfer.

**[0035]** Accordingly, a need exists for a technique of providing an electronic payment service which accelerates the time to payment over existing techniques, yet subjects no more risk to a service provider than the existing techniques.

**[0036]** Some service providers have multiple methods to mitigate risk available. However, these service providers do not choose between the methods.

**[0037]** Implementation of a risk processing method, and thus form of payment, is dependent upon only one of several factors. In one factor, a consumer service provider with which a payor is associated determines the method of risk processing. Another factor is a payment product utilized by a payor. Examples of payment products include person-to-person payment services and business-to-business payment services. Individual payment products are each associated with a single risk processing method. Still another factor is a location of a payor's DDA. That is, a service provider has a good funds relationship with a particular payor's financial institution that enables the service provider to utilize good funds processing on all payments made on behalf of that payor. Yet another factor is the identity of a payee. That is, a service provider has a guaranteed funds relationship with a particular payee that enables the service provider to utilize guaranteed funds processing on all payments to that payee. As will be recognized by one of ordinary skill in the art, there are different costs, times to payment (speed), and risk levels associated with various risk processing models. Current electronic payment service do not differential between cost, speed, and/or risk in payment processing.

**[0038]** Accordingly, a need exists for a technique of providing an electronic payment service in which a method of payment processing is selected based upon one or more of the variables of cost, time to payment, and risk level.

### **OBJECTS OF THE INVENTION**

**[0039]** It is an object of the present invention to provide an electronic payment technique which accelerates the time to payment over existing electronic payment techniques while subjecting a service provider to no more risk than the existing techniques.

**[0040]** Yet another object of the present invention is to provide an electronic payment service in which one or more of the variables of cost, time to payment, and risk level are utilized in selecting a risk processing method.

**[0041]** The above-stated objects, as well as other objects, features, and advantages, of the present invention will become readily apparent from the following detailed description which is to be read in conjunction with the appended drawings.

### **SUMMARY OF THE INVENTION**

**[0042]** In accordance with the present invention, a method and system for making payment to a payee on behalf of a payor are provided. Payment could be a check, draft or other paper instrument delivered to the payee, could be an electronic transfer of funds to the payee, or could be any other form of funds



delivery, electronic or paper. A payor can be any individual, business, or organization which makes payments. A payee can be any individual, business, or organization which receives payments.

**[0043]** The system of the present invention includes one or more communications interfaces and one or more processors. Each communications interface is configured to receive and transmit information. The information is preferably received and transmitted via at least one network. Information received by a communications interface is passed on to a processor, and a processor causes a communications interface to transmit information. The at least one network, if utilized, could be, but is not limited to, the Internet, a local area network, a wide area network, and the public switched telephone network, as well as any other network capable of transmitting information, including a wireless network. A processor can be any type of processor capable of functioning to implement the method as described herein, including, but not limited to, a processor as found in a typical personal computer, main-frame computer, server-type computer, or any other type of computing device.

**[0044]** In accordance with the present invention, a payment request for a payment service provider to pay the payee on behalf of the payor is received. A payment service provider is any entity that makes payment to payees on behalf of payors. The payment request could be received directly from the payor, or could be received from another entity, such as a consumer service provider. A consumer service provider is an entity that makes the services of the payment

service provider available to the payor, but does not necessarily participate in the operations of providing the services.

**[0045]** The payment service provider has at its disposal a plurality of techniques to reduce risk associated with making payment on behalf of payors. The risk is that if the payment service provider delivers funds belonging to the payment service provider to the payee, the payment service provider might not be able to collect funds in at least the amount of the payment from the payor. That is, the risk is a risk of financial loss to the payment service provider. A risk reduction technique provides at least a partial measure, if not a full measure, of protection against this financial loss. The plurality of risk reduction techniques can include, but are not limited to: determining if funds are available in a deposit account associated with the payor prior to making a payment on behalf of the payor; determining if an entity exists from which to collect funds if funds cannot be collected from the payor prior to making payment on behalf of the payor; determining whether payment to the payee will be drawn on a deposit account associated with the payor, or drawn on a deposit account associated with an entity other than the payor, and directing funds to the payee a predetermined period of time subsequent to initiating an electronic debit of a deposit account associated with the payor.

**[0046]** The payment service provider selects an available risk reduction technique and makes payment in accordance with the selected risk reduction technique. The selection can be, as desired, made upon any basis.

**[0047]** In one aspect of the present invention, the multiple risk reduction techniques include at least two of the following risk reduction techniques: determining if funds are available in a deposit account associated with the payor prior to making a payment on behalf of the payor; determining if an entity exists from which to collect funds if funds cannot be collected from the payor prior to making payment on behalf of the payor; determining whether payment to the payee will be drawn on a deposit account associated with the payor, or drawn on a deposit account associated with an entity other than the payor, and directing payment to the payee a predetermined period of time subsequent to initiating an electronic debiting of a deposit account associated with the payor.

**[0048]** In a further aspect of the present invention, the selected risk reduction technique is the determination as to if payor funds are available prior to making payment to the payee. In this aspect, an electronic funds transfer file is transmitted that debits the payor's deposit account and credits a deposit account associated with the payment service provider. After transmission of the electronic funds transfer file a confirmation request is transmitted from the service provider to a financial institution. This financial institution could be a financial institution at which the payor deposit account is maintained, could be a financial institution at which the service provider deposit account is maintained, or could be a financial institution at which both the service provider and payor deposit accounts are maintained. The transmitted information requests confirmation that the payor deposit account has been successfully debited and/or confirmation that the first service provider account has been successfully

credited. A response indicating a successful debiting and/or crediting is received from the financial institution in response to the request.

**[0049]** If the transmitted confirmation request requests confirmation that the debiting is successful, the confirmation request is transmitted to a financial institution at which the payor's deposit account is maintained. If the transmitted confirmation request requests confirmation that the crediting is successful, the confirmation is transmitted to a financial institution at which the service provider deposit account is maintained. Again, it should be noted that the payor financial institution and the payment service provider financial institution could be the same financial institution.

**[0050]** The payment service provider receives a confirmation that at least one of the debit and corresponding credit was successful. In response to the receipt of the confirmation, the service provider issues the payment to the payee. Thus, in this aspect, the payment to the payee is not made until the service provider has confirmation that funds have been obtained from the payor.

**[0051]** In another further aspect of the present invention, the selected risk reduction technique is the determining that an entity is available from which to collect funds if funds cannot be collected from the payor in association with making payment on behalf of the payor. The entity that has agreed to supply funds to the service provider if funds cannot be collected from the payor is identified. In response to the identification, the payment is made to the payee on behalf of the payor. The payment is drawn on a service provider deposit

account. In this aspect, the entity is one of the payee or a consumer service provider with which the payor is associated.

**[0052]** In yet another further aspect of the present invention, the selected risk reduction technique is the determination as to whether payment to the payee will be drawn on the payor's deposit account, or deposit account associated with another entity. The other entity could be the payment service provider, or could be another entity. In this aspect, a determination is made as to if at least one of three conditions has been met. The first condition is a determination as to if the amount of the payment is less than a first predetermined threshold amount. This first predetermined threshold amount can be set by any entity other than the payor.

**[0053]** The second condition is a determination as to if a total monetary amount of payments completed on behalf of the payee within a first certain timeframe is less than a second predetermined threshold amount. The first and second predetermined threshold amounts are preferably different amounts, though they could be the same amount. The timeframe and the second threshold can be set by any entity other than the payor.

**[0054]** The third condition is a determination as to if a number of payments completed on behalf of the payor by the payment service provider within a second certain timeframe is less than a threshold number of payments. The second certain timeframe could be the same as, or different than, the first certain timeframe. Also, the second certain timeframe and the threshold number of payments could be set by any entity other than the payor.

**[0055]** If the payment amount is less than the first threshold amount, if the total amount within the first timeframe is less than the second threshold amount, and/or if the number of payments completed within the second timeframe is less than the threshold number of payments, payment to the payee is drawn on an account associated with an entity other than the payor. The payment could be in the form of a check or an electronic funds transfer.

**[0056]** However, if the payment amount is not less than the first threshold amount, if the total amount within the first timeframe is not less than the second threshold amount, and/or if the number of payments completed within the second timeframe is not less than the threshold number of payments, payment to the payee is a draft drawn on the payor deposit account. Thus, in these situations, payor funds are delivered to the payee, not funds belonging to another entity.

**[0057]** In another aspect of the present invention, the identification of each of those of the plurality of risk reduction techniques is based upon at least one of five factors. The first factor is the identity of the payor. That is, availability of some risk reduction techniques might be dependent upon the identity of the payor. The second factor is the identity of the payee. That is, availability of some risk reduction techniques might be dependent upon the identity of the payee. The third factor identification of a risk reduction technique could be based upon is the identity of a financial institution at which payor deposit account is maintained. That is, availability of some risk reduction techniques might be dependent upon where the payor banks. The fourth factor identification of a risk reduction technique could be based upon is the identity of a consumer service

provider with which the payor is associated. That is, availability of some risk reduction techniques might be dependent upon a consumer service provider with which the payor is associated. The fifth factor is a type of payment service utilized by the payment service provider. That is, some risk reduction techniques may not be available with certain payment services offered by the payment service provider. For example, in some payment services payments to payees are always electronic. In such a case, a draft drawn on a payor's deposit account is not available for use in paying a payee.

**[0058]** In another aspect of the present invention, two or more of the multiple risk reduction techniques are identified as being available. A determination is made as to which of the two or more identified techniques provides a highest level of protection against financial loss to the payment service provider. That is, each of the identified risk reduction techniques reduce risk. However, each technique does not afford the same level of protection. In this aspect, the risk reduction technique determined to provide the highest level of protection is the risk reduction technique that is selected. Payment is effected in accordance with this selected technique that provides the highest level of protection.

**[0059]** In yet another aspect of the present invention, two or more of the multiple risk reduction techniques are identified as being available. A determination is made as to which of the two or more identified techniques is associated with a least cost. The cost could be a cost borne by the payment service provider, or by another entity. That is, each of the identified risk reduction techniques has a cost associated with making payment in accordance

with that technique. In this aspect, the risk reduction technique determined to cost the least to utilize is the risk reduction technique that is selected. Payment is effected in accordance with this selected technique having the least cost.

**[0060]** In still another aspect of the present invention, two or more of the multiple risk reduction techniques are identified as being available. A determination is made as to which of the two or more identified techniques is associated with a shortest time to complete payment. That is, funds are delivered to the payee in different times, dependent upon the risk reduction technique utilized. In this aspect, the risk reduction technique determined to have the fastest time to payment completion is selected. Payment is effected in accordance with this selected technique having the fastest time to payment completion.

**[0061]** According to another aspect of the present invention, two or more of the multiple risk reduction techniques are identified as being available. In this aspect, each risk reduction technique is associated with a priority relative to the other risk reduction techniques. The priorities could be set by the payment service provider, or by a consumer service provider. A determination is made as to which of the two or more identified techniques has the highest priority. In this aspect, the risk reduction technique determined to have the highest priority is selected. Payment is effected in accordance with this selected technique having the highest priority.

**[0062]** It will also be understood by those skilled in the art that the invention is easily implemented using computer software. More particularly, software can be



easily programmed, using routine programming skill, based upon the description of the invention set forth herein and stored on a storage medium which is readable by a computer processor to cause the processor to operate such that the computer performs in the manner described above.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0063]** In order to facilitate a fuller understanding of the present invention, reference is now made to the appended drawings. These drawings should not be construed as limiting the present invention, but are intended to be exemplary only.

**[0064]** Figure 1 is a transition diagram depicting the debit-hold-credit payment model in the prior art.

**[0065]** Figure 2 is simplified depiction of relationships between entities participating in a payment service in accordance with the present invention.

**[0066]** Figure 3 is a simplified depiction of a service provider computing system for providing the payment service in accordance with the present invention.

**[0067]** Figure 4 is simplified depiction of exemplary operations performed to identify an account posture associated with a payment request in accordance with the present invention.

**[0068]** Figure 5A is a first transition diagram showing an exemplary sequence of funds posting and associated information flows in accordance with the present invention.

**[0069]** Figure 5B is a second transition diagram showing an exemplary sequence of funds posting and associated information flows in accordance with the present invention

**[0070]** Figure 5C is a third transition diagram showing an exemplary sequence of funds posting and associated information flows in accordance with the present invention.

**[0071]** Figure 5D is a fourth transition diagram showing an exemplary sequence of funds posting and associated information flows in accordance with the present invention.

**[0072]** Figure 5E is a fifth transition diagram showing an exemplary sequence of funds posting and associated information flows in accordance with the present invention.

**[0073]** Figure 6A is an exemplary depiction of debiting option metadata in accordance with the present invention.

**[0074]** Figure 6B is an exemplary depiction of other debiting option metadata in accordance with the present invention.

**[0075]** Figure 7 is an exemplary depiction of crediting option metadata in accordance with the present invention.

**[0076]** Figure 8 is a simplified exemplary depiction of payment processing in accordance with the present invention.

**[0077]** Figure 9 is an exemplary depiction of the identification of processing context elements of Figure 8 in accordance with the present invention.

**[0078]** Figure 10A is an exemplary depiction of the assembly of debit and credit options of Figure 8 in accordance with the present invention.

**[0079]** Figure 10B is a further exemplary depiction of the assembly of debit and credit options of Figure 8 in accordance with the present invention.

**[0080]** Figure 11 is an exemplary depiction of the evaluation and selection of a debit and credit combination of Figure 8 in accordance with the present invention.

#### **DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT**

**[0081]** Figure 2 depicts a service provider 201 of at least an electronic payment service and a set of entities with which the service provider 201 interacts in providing the service. The service provider 201 could, as desired, also provide an electronic bill presentment service, as well as other electronic commerce services. Thus, the service provider 201 is at least an electronic payment service provider, and could, as desired, be an electronic billing and payment service provider.

**[0082]** The service provider 201 provides the payment service to one or more subscribers 203A-203N. Subscribers 203A-203N communicate with the service provider 201 via a network 206. The network 206 preferably is the Internet,

though it could be another public network, or even a private network. Further, the network 206 could be multiple networks.

**[0083]** A subscriber 203A-203N, in some instances, communicates directly with the service provider 201. In other instances, a subscriber 203A-203N communicates with the service provider 201 through one of consumer service providers 207A-207N.

**[0084]** A consumer service provider (CSP) 207A-207N is an entity that offers a payment service to certain ones of subscribers 203A-203N, while the service provider 201 provides the functionality, i.e., payment processing, of completing payments. Examples of CSPs include, but are not limited to, financial institutions, Internet portals, payees, billers, and software providers. A CSP 207A-207N may, as desired, present a payment service user interface to a subscriber 203A-203N to provide information to, and receive information from, a subscriber 203A-203N. In such instances, such a CSP 207A-207N receives information from the service provider 201, via the network 206, and then presents such to a subscriber 203A-203N. Likewise in such instances, a CSP 207A-207N receives information from a subscriber 203A-203N, and then passes such to the service provider 201 via the network 206. Communications between a subscriber 203A-203N and a CSP 203A-203N can, as desired, be via the network 206, via another network, or otherwise.

**[0085]** In other situations in which a CSP 207A-207N offers the payment service, the service provider 201 provides a payment service user interface

directly to a subscriber 203A-203N, via the network 206, that is branded as belonging to a CSP 207A-207N. A CSP is also known as a sponsor.

**[0086]** Also shown in Figure 2 is one or more unmanaged payees 213A-213N. An unmanaged payee 213A-213N and the service provider 201 do not have a relationship. Because of the lack of a relationship, Figure 2 does not depict unmanaged payees 213A-213N in communication with the network 206. It should be noted that the service provider 201 interacts with an unmanaged payee, 213A-213N in traditional paper form when making payment to an unmanaged payee 213A-213N.

**[0087]** Figure 2 also depicts one or more managed payees 210A-210N. As discussed above, a managed payee 210A-210N is a payee about whom the service provider 201 maintains information that enables remittance to that managed payee to be handled in some improved and/or optimal fashion, such as electronically via the network 206, and/or via another network. It is not required that each managed payee communicate via the network 206, or via any other network.

**[0088]** Also shown in Figure 2 is one or more financial institutions 215A-215N. Multiple ones of the financial institutions 215A-215N maintain a demand deposit account belonging to the service provider 201. Preferably, a financial institution (FI) 215A-215N maintaining a service provider account communicates with the service provider 201 via the network 206. However, not all aspects of the present invention require such electronic communication. Also, each of the subscribers 203A-203N is associated with at least one respective demand

deposit account maintained at one of the FIs 215A-215N. Furthermore, each of the managed payees 210A-210N is associated with at least one respective demand deposit account maintained at one of the FIs 215A-215N. The present invention does not require that each FI 215A-215N communicate via the network 206.

**[0089]** The service provider 201 maintains a computing system to support the electronic payment service of the present invention. The computing system includes one or more computing platforms, with one computing platform 300 shown in Figure 3, networked together. Each computing platform consists of one or more processors 303 configured to execute programming instructions stored in at least one memory 305. Each computing platform 300 includes one or more communication interfaces 315 for transmitting and receiving data at least via the network 206. As desired, a communication interface 315 also transmits and/or receives data via one or more networks other than the network 306. Additionally, the computing system includes a data repository 310, which may reside on the computing platforms 300, as shown in Figure 3, other dedicated database servers, or elsewhere on a computing network connecting computing platforms 300.

**[0090]** The data repository 310 preferably includes a payment history database 310A that stores information associated with each payment completed by the service provider 201 on behalf of each subscriber 203A-203N. The data repository 310 also includes a managed payee database 310B that stores information associated with managed payees 210A-210N. The managed payee

database 310B will be further discussed below. The data repository 310 also includes a subscriber profile database 310C that stores information associated with subscribers 203A-203N. The subscriber profile database 310C will be further discussed below. Also included in the data repository 310 is a service provider DDA database 310D, storing information associated with each service provider demand deposit account. The service provider DDA database 310D could also, as desired, store information associated with DDAs of the subscribers 203A-203N and of the managed payees 210A-210N, in addition to information associated with service provider accounts that are not demand deposit accounts, such as credit accounts. Other information may also, as desired, be stored in the data repository 310, though not shown in Figure 3.

### **Multiple (Distributed) Operating Accounts**

**[0091]** An internal funds transfer, also known as an “on us” funds transfer, is a transfer of funds between accounts maintained at a single FI 215A-215N. On us funds transfers are completed more rapidly than funds transfers between accounts maintained at separate FIs 215A-215N. Typically, “on us” funds transfers are posted by a FI 215A-215N the same day an “on us” funds transfer request is received. According to this aspect of the present invention, to increase the speed at which payment requests are fulfilled, the service provider 201 maintains multiple demand deposit accounts, each at a different one of the financial institutions 215A-215N.

**[0092]** Information associated with each of the multiple service provider DDAs is stored in the service provider DDA database 310D. The stored information includes an account number of each of the multiple service provider DDAs and a routing number of each of the financial institutions 215A-215N at which a service provider DDA is maintained. Beneficially, though not required, the stored information also includes a current balance of each of the multiple service provider DDAs.

**[0093]** Selection of a financial institution 215A-215N at which to maintain a service provider DDA is made based at least in part upon information stored in at least one of the payment history database 310A, the managed payee database 210B, and/or the subscriber profile database 310C.

**[0094]** Establishment of a service provider DDA at a particular FI 215A-215N can, as desired, be triggered based upon a number of subscribers 203A-203N associated with DDAs maintained at a certain FI 215A-215N. Information identifying a routing number of each subscriber's financial institution is stored in the subscriber profile database 310C.

**[0095]** In this alternative, a processor 303 at least once, or possibly periodically, sweeps (reads each entry) the subscriber profile database 310C and identifies the number of occurrences of each routing number appearing in the subscriber profile database 310C. For those routing numbers occurring a predetermined number of times, set as desired by the service provider 201, the processor 303 stores information identifying that financial institution 215A-215N in a candidate financial institution list, which preferably is a part of the data



repository 310. Alternatively, the processor 303 could maintain the candidate financial institution list as a list of all financial institutions referenced in the subscriber profile database 310C, each associated with its number of occurrences. The candidate financial institution list could be beneficially sorted by number of occurrences. As desired, the processor 303 could also determine, prior to storing information in the candidate financial institution list, if a service provider DDA is already maintained at a given financial institution. If so, information identifying that financial institution is not stored in the candidate financial institution list. Service provider 201 personnel utilize the candidate financial institutions list to establish (open) service provider DDAs.

**[0096]** Establishment of a service provider DDA at a particular FI 215A-215N can, as desired, be triggered based upon a number of electronic managed payees 210A-210N each being associated with a DDA maintained at a certain financial institution 215A-215N. Information identifying a routing number of each electronic managed payee's financial institution is stored in the managed payee database 210B.

**[0097]** In this alternative, the processor 303 at least once, or possibly periodically, sweeps the managed payee database 310B and identifies the number of occurrences of each routing number appearing in that database. For those routing numbers occurring a predetermined number of times, set as desired by the service provider 201, the processor 303 stores information identifying that financial institution 215A-215N in the candidate financial institution list. Alternatively, the processor 303 could maintain the candidate

financial institution list as a list of all financial institutions referenced in the managed payee database 310B, each associated with its number of occurrences. The candidate financial institution list could be beneficially sorted by number of occurrences. As desired, the processor 303 could also determine, prior to storing information in the candidate financial institution list, if a service provider DDA is already maintained at a given financial institution. If so, information identifying that financial institution is not stored in the candidate financial institution list. As discussed above, service provider 201 personnel utilize the candidate financial institutions list to establish service provider DDAs.

**[0098]** Selection of a financial institution 215A-215N at which to establish a service provider DDA can be triggered based upon a volume payments made on behalf of subscribers 203A-203N, as well as a volume of payments made to electronic managed payees 210A-210N. Information associated with each payment completed by the service provider 201 is stored in the payment history database 310A. This includes information identifying the payor (subscriber 203A-203N) and payee (managed payee 210A-210N or unmanaged payee 213A-213N).

**[0099]** In this alternative, the processor 303 at least once, or possibly periodically, sweeps the payment history database 310A and identifies the number of occurrences of payment made on behalf of each subscriber 203A-203N and the number of occurrences of payment made to each electronic managed payee 210A-210N. For those subscribers 203A-203N associated with a predetermined number of occurrences of payment, set as desired by the

service provider 201, the processor 303 then accesses the subscriber profile database 310C and retrieves the routing numbers associated with these subscribers 203A-203N. Alternatively, the processor 303 could maintain the candidate financial institution list as a list of all financial institutions referenced in the subscriber profile database 310C, each associated with its number of payments. The candidate financial institution list could be beneficially sorted by number of payments. And, for those electronic managed payees 210A-210N associated with a predetermined number of occurrences of payment, set as desired by the service provider 201, the processor 303 access the managed payee database 310B and retrieves the routing number associated with these managed payees 210A-210N. Alternatively, the processor 303 could maintain the candidate financial institution list as a list of all financial institutions referenced in the managed payee database 310B, each associated with its number of payments. The candidate financial institution list could be beneficially sorted by number of payments.

**[0100]** The processor 303 stores information identifying those financial institutions 215A-215N associated with the retrieved routing numbers in the candidate financial institution list. As discussed above, the processor 303 could also, as desired, determine, prior to storing information in the candidate financial institution list, if a service provider DDA is already maintained at a given financial institution. If so, information identifying that financial institution is not stored in the candidate financial institution list. As discussed above, service provider 201 personnel utilize the candidate financial institutions list to establish service

provider DDAs. Other methods, beyond the ones described above, can, as desired, be utilized to select financial institutions 213A-213N at which to maintain service provider DDAs.

**[0101]** Because the service provider 201 is associated with multiple DDAs, any received payment request to pay an electronic managed payee 210A-210N can give rise to one of six “account postures”. In the first account posture, the payor (subscriber) DDA and the payee (electronic managed payee) DDA are maintained at the same FI 215A-215N, while the service provider 201 is not associated with a DDA at that financial institution 215A-215N.

**[0102]** In the second account posture, the payor, the payee, and the service provider 201 are each associated with DDAs maintained at the same financial institution 215A-215N.

**[0103]** In the third account posture, the payor DDA and the payee DDA are maintained at different financial institutions, while the service provider 201 is associated with DDAs maintained at both these financial institutions 215A-215N.

**[0104]** In the fourth account posture, the payor DDA and the payee DDA are maintained at different financial institutions 215A-215N, while the service provider 201 is associated with a DDA maintained at the payor’s financial institution, but is not associated with a DDA maintained at the payee’s financial institution.

**[0105]** In the fifth account posture, the payor DDA and the payee DDA are maintained at different financial institutions, while the service provider 201 is

associated with a DDA maintained at the payee's financial institution, but is not associated with a DDA maintained at the payor's financial institution.

**[0106]** In the sixth account posture, the payor DDA and the payee DDA are maintained at different financial institutions, while the service provider 201 is not associated with a DDA maintained at either the payor's financial institution, or the payee's financial institution.

**[0107]** Figure 4 is a simplified depiction of exemplary operations during payment processing performed in accordance with one aspect of the present invention to identify an account posture associated with a payment request. It should be noted that the operations depicted in Figure 4 could be performed in a different order. Additionally, other operations could be, as desired, performed to identify an account posture associated with a payment request. At step 401 a payment request, including at least information identifying a subscriber 203A-203N (the payor), a payee (an electronic managed payee in this example), and a payment amount, is received by a communication interface 315 via the network 206. The received payment request is passed on to a service provider processor 303.

**[0108]** The processor 303 identifies the financial institution 215A-215N at which the payor's DDA is maintained and the financial institution 215A-215N at which the payee's DDA is maintained. It should be noted that a payor could be associated with multiple DDAs, perhaps at multiple financial institutions 215A-215N. In such instances, information identifying each DDA is included in the subscriber profile database 310C. To identify the payor's FI, or FIs, the

processor 303 accesses the subscriber profile database 310C based upon information contained in the received payment request or based upon a prior user preference setting, and retrieves the routing number of the payor's FI for the particular DDA to be used as the funding account. To identify the payee's FI, the processor 303 accesses the managed payee database 210B, based upon information contained in the received payment request, and retrieves the routing number of the payee's FI for the particular remittance center to be targeted.

**[0109]** At step 408 the processor 303 determines if the payor's FI is the same as the payee's FI. This is accomplished by comparing the retrieved routing numbers. If the routing numbers are the same, operations continue with step 415. If the routing numbers are different, operations continue with step 410.

**[0110]** At step 415 the processor 303 determines if the service provider 201 is associated with a DDA maintained at the payor's and payee's common financial institution. In Figure 4 the service provider 201 is referred to as "S.P." To do so, the processor 303 accesses the service provider DDA database 310D and determines if the routing number of the common payor/payee financial institution is contained therein. If not, the processor 303 invokes account posture one processing, to be discussed further below, to complete the payment to the payee on behalf of the payor, step 417. If so, the processor 303 invokes account posture two processing, to be discussed further below, to complete the payment to the payee on behalf of the payor, step 420.

**[0111]** At step 410, performed if the payor's financial institution is different than the payee's financial institution, the processor 303 determines if the service

provider 201 is associated with a DDA at both the payor's FI and the payee's FI. To make this determination, the processor 303 accesses the service provider DDA database 310D and determines if both the routing number of the payor's FI and the routing number of the payee's FI are contained therein. If the service provider 201 does not have a demand deposit account at both the payor's FI and the payee's FI, operations continue with step 422. If the service provider 201 is associated with a DDA at the payor's FI and a DDA at the payee's FI, operations continue with step 412. At step 412 the processor 303 invokes account posture three processing, to be discussed further below, to complete payment to the payee on behalf of the payor.

**[0112]** At step 422 the processor 303 determines if the service provider 201 is associated with a DDA at the payor's FI based upon, as above, information stored in the service provider DDA database 310D and the routing number of the payor's FI. If not, operations continue with step 425. If so, operations continue with step 423 in which the processor 303 invokes account posture four processing, to be discussed further below, to complete payment to the payee on behalf of the payor.

**[0113]** If the service provider 201 is not associated with a DDA maintained at the payor's FI, at step 425 the processor 303 determines if the service provider 201 is associated with a DDA at the payee's FI. This determination is made, as above, based upon information stored in the service provider DDA database 310D and the routing number of the payee's financial institution. If so, operations continue with step 430 in which the processor 303 invokes account posture five

processing, to be discussed further below, to complete payment to the payee on behalf of the payor. If not, operations continue with step 427 in which the processor 303 invokes account posture six processing, to be discussed further below, to complete payment to the payee on behalf of the payor.

**[0114]** Figures 5A through 5E are transition diagrams showing operations in completing payment in accordance with account postures one through five. For any of the account postures, whether a depicted action occurs on one day or another may be variable. What is depicted in Figures 5A through 5E is the processing giving rise to the quickest funds delivery to a payee, while protecting the service provider 201 from risk.

**[0115]** Preferably the service provider 201 transmits debit instructions and/or credit instructions directly to those financial institutions 215A-215N that maintain service provider DDAs. However, in some instances debit and/or credit instructions may be transmitted to such financial institutions via the ACH network, or another network. The possibility of use of a paper instrument (check or draft) has been excluded from this discussion for the sake of simplicity.

**[0116]** For each debit instruction issued by the service provider 201 to a FI 215A-215N at which a service provider DDA is maintained, the service provider 201 issues a confirmation request to that financial institution to determine if the debiting was successful, or that the corresponding credit into the service provider DDA was successful. The service provider 201 receives back a response indicating success or failure. If the response indicates failure, a corresponding credit to the debiting is not issued. If the response indicates success, the



corresponding credit is issued. Preferably, this debit confirmation request-response is a fully automated real-time communication. However, it could be completely manual, or only partially automated. Further, if fully automated, the process could be unique to each financial institution, rather than standard for all financial institutions.

**[0117]** The service provider 201 maintains funds in each of the multiple DDAs. As introduced above, beneficially a current balance of each of the multiple DDAs is reflected in the service provider DDA database 310D. As any service provider DDA is credited or debited, a service provider processor 303 updates the balance reflected in the service provider DDA database 310D. Also, as necessary, the processor 303, via wire transfer requests or similar arrangement, redistributes funds between the service provider DDAs, as will be discussed further below. Any redistribution of funds is likewise reflected in the stored balances, if included.

**[0118]** Use of multiple service provider demand deposit accounts enables the service provider 201 to accelerate many payments to payees as compared to the debit-hold-credit model, while incurring no additional risk beyond that incurred in the debit-hold-credit model.

**[0119]** Figure 5A is a transition diagram that shows the sequence of funds posting and associated information flows after the processor 303 invokes account posture one processing at step 417 of Figure 4. The time to payment in this account posture is effectively the same as in the debit-hold-credit model, five (business) days.

**[0120]** Axis 203A represents a payor, in this example subscriber 203A. Axis 503 represents the payor's DDA maintained at financial institution 215A, which is represented by axis 215A. Note that in this account posture, both the payor DDA 503 and the payee DDA 517 are maintained at the same financial institution. As such, the payee's financial institution 215A is represented by another instance of axis 215A. Axis 201 represents the service provider. Axis 215B represents a service provider financial institution. Axis 512 represents a service provider DDA at FI 215B. Axis 515 represents a Federal Reserve Bank. Axis 517 represents the payee's DDA at FI 215A. Axis 210A represents the payee.

**[0121]** On day 1 the processor 303 generates a debit instruction to debit the payor's DDA 503 in favor of the service provider DDA 512. The processor 303 causes a communication interface 315 to transmit the generated debit instruction. Communication 530 depicts the generated debit instruction being transmitted from the service provider 201 to the Federal Reserve Bank 515 via the ACH network. Communication 532 depicts the debit instruction being forwarded on to the payor's FI 215A by the Federal Reserve Bank 515 via the ACH network.

**[0122]** Detail 535 depicts funds moving from the payor's DDA 503 to the service provider's DDA 512 on day 2, due to the time lag incurred because of the batch transmission format of the ACH network. Because the service provider 201 does not have a relationship with the payor's FI 215A the service provider 201 cannot obtain a confirmation that the debiting was successful. Rather, the service provider 201 instead waits, as in the debit-hold-credit method, a period of

time before issuing a credit to the payee 210A. As above, this hold period is three days, though it certainly could be a different period of time.

**[0123]** Assuming that the service provider 201 does not receive an exception, on day 4 the processor 303 generates a credit instruction to credit the payee's DDA 517 from the service provider's DDA 512. It should be noted that any service provider DDA could, as desired, be utilized as the source of the credit. The processor 405 causes a communication interface 315 to transmit the generated credit instruction. Communication 537 depicts the credit instruction being transmitted from the service provider 201 to the Federal Reserve Bank 515 via the ACH network. Communication 540 depicts the credit instruction being forwarded to the payee's financial institution 215A by the Federal Reserve Bank 515 via the ACH network.

**[0124]** On day 5 funds move from the service provider's DDA 512 to the payee's DDA 517, as shown in detail 542. Also on day 5 the processor 303 generates remittance advice and causes a communication interface 315 to transmit the remittance advice to the payee 210A, via the network 206, communication 545. Alternatively, the remittance advice could have been sent a day earlier, in association with transmission of the credit instruction, in anticipation of the propagation of funds to the payee.) The payment request is now fulfilled. Of course, remittance advice could be delivered in another manner, as desired, such as via another network, or via hardcopy.

**[0125]** Figure 5B is a transition diagram that shows the sequence of funds posting and information flows after the processor 303 invokes account posture

two processing at step 420 of Figure 4. The time to payment in this account posture is only two days, while the service provider 201 is at no more risk than in the debit-hold-credit model.

**[0126]** Axis 203B represents a payor, in this example subscriber 203B. Axis 504 represents the payor's DDA maintained at financial institution 215B, which is represented by axis 215B. Note that in this account posture, the payor DDA 504, payee DDA 518, and a service provider DDA 512 are maintained at the same financial institution, FI 215B. As such, the service provider's FI is represented by another instance of axis 215B, and the payee's financial institution is represented by still another instance of axis 215B. Axis 515 represents the Federal Reserve Bank. Axis 518 represents the payee's DDA. Axis 210B represents the payee.

**[0127]** On day 1 the processor 303 generates a debit instruction to debit the payor's DDA 504 in favor of the service provider DDA 512. The processor 303 causes a communication interface 315 to transmit the generated debit instruction. Communication 546 depicts the generated debit instruction being transmitted from the service provider 201 directly to the payor's FI 215B, which also is the service provider's FI 215B. This transmission is preferably via network 206, but could be, as desired, via another network. Because this is an "on us" transaction, detail 547 depicts funds moving from the payor's DDA 504 to the service provider's DDA 512 on day 1.

**[0128]** On day 2 the processor 303 generates a confirmation request and causes a communication interface 315 to transmit the generated confirmation request to common financial institution 215B, via the network 206,

communication 548. Communication 548 could be, as desired, via another network. Communication 549 depicts a positive confirmation response being transmitted from the common financial institution 215B to the service provider 201 via the network 206. Of course, communication 549 could, as desired, be via another network. It will be recognized that the confirmation request could be, as desired, generated and transmitted on day 1. Further, the confirmation request/response could, as desired, be manual.

**[0129]** After receipt of a positive confirmation response, shown in Figure 5B as being on day 2, the processor 303 generates a credit instruction to credit the payee's DDA 518 from the service provider's DDA 512. The processor 303 causes a communication interface 315 to transmit the generated credit instruction to the common FI 215B preferably via network 206, communication 550.

**[0130]** Because this is another "on us" transaction, detail 551 depicts funds moving from the service provider's DDA 512 to the payee's DDA 518 on day 2. Also on day 2 the processor 303 generates and causes a communication interface 315 to transmit remittance advice to the payee 210A via the network 206, communication 552. The payment request is now fulfilled. As desired, remittance advice could be sent utilizing another method.

**[0131]** Figure 5C is a transition diagram that shows the sequence of funds posting and information flows after the processor 303 invokes account posture three processing at step 412 of Figure 4. The time to payment in this account posture is again only two days.

**[0132]** Axis 203C represents a payor, in this example subscriber 203C. Axis 505 represents the payor's DDA maintained at financial institution 215C, which is represented by axis 215C. Axis 210C represents a payee. Axis 519 represents the payee's DDA maintained at financial institution 215D, which is represented by axis 215D. In account posture three, the service provider 201 is associated with DDAs at the payor's FI 215C, the payee's FI 215D, and its own primary FI, shown as FI 215B. Axis 506 represents the service provider's DDA at FI 215C. Axis 507 represents the service provider's DDA at FI 215D. Axis 652 represents the service provider's DDA at FI 215B.

**[0133]** On day 1 the processor 303 generates a debit instruction to debit the payor's DDA in favor of the service provider's DDA 506 at FI 215C. Communication 553 depicts the generated debit instruction being transmitted from the service provider 201 directly to the payor's FI 215C, preferably via network 206, at the direction of the processor 303. Because this is an "on us" transaction, detail 554 depicts funds moving from the payor's DDA 505 to the service provider's DDA 506 on day 1.

**[0134]** On day 2 the processor 303 generates a confirmation request and then causes a communication interface 315 to transmit the generated confirmation request to financial institution 215C via the network 206, communication 555. Communication 556 depicts a positive confirmation response being transmitted from financial institution 215C to the service provider 201 via the network 206. As above, one or both of communications 555 and 556 could, as desired, be via another network, or even manual.

**[0135]** After receipt of a positive confirmation response the processor 303 generates a credit instruction to credit the payee's DDA 519 from service provider DDA 507 maintained at FI 215D. The processor 303 causes a communication interface 315 to transmit the generated credit instruction to the FI 215D via network 206, communication 557. Optionally, a balance verification could be performed before transmitting the credit instruction to prevent overdrawing DDA 507.

**[0136]** Because this is another on us transaction, Detail 558 depicts funds moving from the service provider's DDA 507 to the payee's DDA 519 on day 2. Also on day 2 the processor 303 generates and causes a communication interface 315 to transmit remittance advice to the payee 210C via the network 206, communication 559. The payment request is now fulfilled. Of course, remittance advice could be, as desired, delivered differently.

**[0137]** As necessary, the processor 303 generates a funds transfer request to move funds from the service provider DDA 506 maintained at FI 215C to another service provider DDA, such as the service provider DDA 652 maintained at FI 215B. Thus, the service provider 201 can move the funds obtained from the payor's DDA 505 into another service provider DDA maintained at any FI 215A-215N. Communication 560 depicts the generated funds transfer request being transmitted from the service provider 201 to FI 215C at the direction of the processor 303. Detail 561 depicts funds moving from service provider DDA 506 to service provider DDA 652.

**[0138]** Also as necessary, the processor 303 generates a funds transfer request to move funds into the service provider DDA 507 maintained at FI 215D from another service provider DDA, such as DDA 652 maintained at FI 215B. Communication 562 depicts a generated funds transfer request being transmitted from the service provider 201 to FI 215B. Detail 563 depicts funds moving from service provider DDA 652 to service provider DDA 507. It should also be noted that, as the funds movement could be between any pair of service provider DDAs, the movement from of funds from service provider DDA 506 to service provider DDA 507 could have been accomplished via a single request and a single transfer, if the amount to be debited from DDA 506 was equal to the amount to be credited to DDA 507.

**[0139]** Figure 5D is a transition diagram that shows the sequence of funds posting and information flows after the processor 303 invokes account posture four processing at step 423 of Figure 4. The time to payment in this account posture is three days.

**[0140]** Axis 203D represents a payor, in this example subscriber 203D. Axis 508 represents the payor's DDA maintained at financial institution 215E, which is represented by axis 215E. Axis 210D represents a payee. Axis 510 represents the payee's DDA maintained at financial institution 215F, which is represented by axis 215F. In account posture four, the service provider 201 is associated with a DDA at the payor's FI 215E, but not the payee's FI 215F. Axis 509 represents the service provider's DDA at FI 215E. In addition, the primary service provider DDA is represented by axis 512 at FI 215B.



**[0141]** On day 1 the processor 303 generates a debit instruction to debit the payor's DDA 508 in favor of service provider DDA 509. Communication 564 depicts the generated debit instruction being transmitted from the service provider 201 directly to the payor's FI 215E, at the direction of the processor 303, preferably via the network 206. Because this is an "on us" transaction, detail 565 depicts funds moving from the payor's DDA 508 to the service provider's DDA 509 on day 1.

**[0142]** On day 2 the processor 303 generates a confirmation request and then causes a communications interface 315 to transmit the generated confirmation request to financial institution 215E via the network 206, communication 566. Communication 567 depicts a positive confirmation response being transmitted from financial institution 215E to the service provider 201 via the network 206. As above, the confirmation request and response could be, as desired, performed differently.

**[0143]** After receipt of a positive confirmation response the processor 303 generates a credit instruction to credit the payee's DDA 510 from service provider DDA 512 maintained at FI 215B. The processor 303 causes a communication interface 315 to transmit the generated credit instruction to the Federal Reserve Bank via the ACH network, communication 568. The generated credit instruction is further transmitted to the payee's FI 215F via the ACH by the Federal Reserve Bank 515.

**[0144]** As necessary, the processor 303 generates and causes a communication interface 315 to transmit a funds transfer request to FI 215E via

the network 206. Detail 571 depicts funds moving from the service provider DDA 509 to the service provider DDA 512.

**[0145]** On day 3 funds move from the service provider's DDA 512 to the payee's DDA 510, detail 572. Also on day 3 the processor 303 generates and causes a communications interface 315 to transmit remittance advice to the payee 210D via the network 206, communication 573. Of course, remittance advice could be delivered differently. The payment request is now fulfilled.

**[0146]** Figure 5E is a transition diagram that shows the sequence of funds posting and information flows after the processor 303 invokes account posture five processing at step 430 of Figure 4. The time to payment in this account posture is four days.

**[0147]** Axis 203E represents a payor, in this example subscriber 203E. Axis 511 represents the payor's DDA maintained at financial institution 215G, which is represented by axis 215G. Axis 210E represents a payee. Axis 516 represents the payee's DDA maintained at financial institution 215H, which is represented by axis 215H. In account posture five, the service provider 201 is associated with a DDA at the payee's FI 215H, but not the payor's FI 215G. Axis 513 represents the service provider's DDA at FI 215H. In addition, the primary service provider DDA is represented by axis 512 at FI 215B.

**[0148]** On day 1 the processor 303 generates a debit instruction to debit the payor's DDA 511 in favor of service provider DDA 512. The processor 303 causes a communications interface 315 to transmit the generated debit instruction to the Federal Reserve Bank 515 via the ACH network,

communication 575. The Federal Reserve Bank 515 further transmits the debit instruction to the payor's FI 215G via the ACH network, communication 576. Detail 577 depicts funds moving from the payor's DDA 511 to the service provider's DDA 512 on day 2.

**[0149]** After a three day hold period, on day 4 the processor 303 generates a credit instruction to credit the payee's DDA 516 from service provider DDA 513 maintained at FI 215H. The processor 303 causes a communication interface 315 to transmit the generated credit instruction to the FI 215H, preferably via network 206, communication 578.

**[0150]** Because this is another "on us" transaction, detail 579 depicts funds moving from the service provider DDA 513 to the payee DDA 516 on day 4. Also on day 4 the processor 303 generates and causes a communications interface 315 to transmit remittance advice to the payee 210E via the network 206, communication 580. Remittance advice could, as desired, be delivered differently. The payment request is now fulfilled.

**[0151]** As necessary, the processor 303 generates a funds transfer request to move funds from the service provider DDA 512 maintained at FI 215B to service provider DDA 513 maintained at FI 215H.

**[0152]** Account posture six, in which the service provider 201 is not associated with a DDA maintained at the payor's FI and is not associated with a DDA maintained at the payee's FI, is the same account posture described as in the debit-hold-credit model, described above. As such, account posture six

processing, invoked at step 427, will not be described here, as it is the same described above and shown in Figure 1.

**[0153]** It should be noted that a portion of the above-described processing can, as desired, be utilized when a payee is an unmanaged payee 213A-213N. In such situations, a service provider DDA is selected to receive debited funds based upon the location of the payor's DDA. The credit portion of the transition would be by check drawn on a service provider account.

#### **Optimized Payment Method Selection**

**[0154]** In this aspect of the invention an optimal combination of debit and credit methods for fulfilling a payment request in view of a particular prioritization between risk, cost, and speed is provided. Of course, other factors besides, and/or in addition to, risk, cost, and/or speed could be utilized, as desired. For each payment request, the service provider 201 determines an optimal method of debiting a payor and crediting a payee (managed payee 210A-210N or unmanaged payee 213A-213N) based upon variables associated with at least one of a payor, (subscriber 203A-203N), a payee, a payment amount, a CSP 207A-207N, a payor's DDA, a payee's DDA, and a service provider DDA. Other variables, as desired, may be utilized, instead of, or in addition to, these listed. These variables control one or more of risk processing methods utilized, form of debiting and/or crediting utilized, and service provider DDA, or DDAs, utilized. Of course, the variables can, as desired, control other aspects of payment processing.

**[0155]** In support of this aspect, the service provider 201 maintains metadata associated with each debiting option and each crediting option available to the service provider. Figures 6A and 6B are simplified depictions of exemplary debiting options metadata. Figure 7 is a simplified depiction of exemplary crediting options metadata. The debiting options and the crediting options metadata is preferably stored in the data repository 310.

**[0156]** As seen in Figures 6A and 6B, metadata associated with debiting options, for each debiting option, includes an identifier 601, a brief description of the debiting option 603, an indicator as to whether a payment amount and/or payment volume risk analysis is required 605, an indicator as to whether a service provider DDA is required at a payor's FI 607, an indicator as to whether a service provider DDA is required at a payee's FI 609, an indicator as to whether payee reversibility, or equivalent guaranteed funds processing, is required 611, a risk factor level 613, a speed factor level 615, a cost factor level 617, credit options available 619, and a time delay, in days, as to when a credit can be initiated subsequent to initiating a debit 621. Risk, speed, and cost factor levels are determined by the service provider 201, preferably based upon experience and business needs. It should be noted that the brief description 603 is shown in Figures 6A and 6B for reader understanding and preferably is omitted. The brief descriptions may be likewise included in documentation.

**[0157]** As seen in Figure 7, metadata associated with crediting options, for each crediting option, includes an identifier 701, a brief description of the crediting option 703, similar to the debiting option brief description 603, an

indicator as to whether a service provider DDA is required at a payor's FI 707, an indicator as to whether a service provider DDA is required at a payee's FI 709, an indicator as to whether the payee's DDA and the payor's DDA must be maintained at a same FI 710, a speed factor level 715, a cost factor level 717, and an indicator as to when funds will be available to the payee subsequent to initiation of an electronic credit 720.

**[0158]** The data repository 310 also includes priority preference information used to select between debiting options and to select between crediting options. This information is an ordering of risk, cost, and speed. Priority preference information exists at a system (default) level, and may, dependent upon whether supplied by a CSP 307A-301N, exist at a CSP level, per consumer service provider 207A-207N. Also, for speed and cost only, priority preference information may exist at a payor level, per subscriber 203A-203N, dependent upon whether supplied by a subscriber 203A-203N.

**[0159]** Also, the data repository 310 preferably includes option modification information. Available debiting and crediting options can be modified at the CSP level and/or a product level. For example, a particular CSP could decide that, if a hold period is to be utilized for any given payment, it must always be a three day hold period, while another CSP could decide on a different hold period. Also for example, a person-to-person payment product could require a payee to be electronically creditable, thus eliminating check or draft as a debiting/crediting option. And, also for example, a business-to-business payment product could

require a unique hold period different from that utilized in other payment products.

**[0160]** The managed payee database 310B, introduced above, includes, for each managed payee 210A-210N, an indicator as to a status of that managed payee 210A-210N as an electronic managed payee, and an indicator as to whether the service provider 201 has a reversibility agreement with that managed payee 210A-210N. Preferably, though not required, stored in association with reversibility agreement indicators are payee-established and service provider-established payee credit amount limits. A payee-established payee credit amount limit indicates the maximum amount per payment request for which the payee is willing to assume risk under a guaranteed funds, or reversibility, agreement. Such a payee reversibility agreement typically does not guarantee that funds are present in a payee's DDA to be recaptured in case of a failed payor debit. As a result, risk still exists, though payee-related risk instead of payor-related risk. The service provider 201 may then set a service provider-established payee credit amount limit based upon historical experience with a managed payee 210A-210N. This limit indicates a maximum amount per payment request, different than the payee-established payee credit amount limit, the service provider is willing to issue as a reversible credit with no further risk processing. Of course, other factors can be utilized, as desired, to set payment credit amount limits.

**[0161]** Figure 8 is a simplified depiction of payment processing in accordance with one aspect of the present invention. For any received payment request the

service provider 201 first identifies the processing context elements, step 801. Identifying processing context elements is discussed further below and shown in Figure 9.

**[0162]** Next, the service provider 201 assembles a set of available debit options and available credit options for the payment based upon the identified context elements, step 805. Assembly of debit and credit options is discussed further below and shown in Figures 10A and 10B. The service provider 201 then evaluates the assembled options and selects the optional combination, step 807. The evaluation and selection of step 807 will be discussed further below and shown in Figure 11. Finally, the selection options are executed to debit the payor and credit the payee, step 809.

**[0163]** Exemplary operations to identify processing context elements are shown in Figure 9. However, identification of these elements could be closely coupled with use of each element in assembling the set of available debit options and available credit options. Also, the steps shown in Figure 9 could be performed in a different order. After receipt of a payment request, via the network 206, and upon initiation of payment processing, a service provider processor 303 identifies the payor (subscriber 203A-203N) based upon the payment request, step 901. The payor can be, as desired, either explicitly or implicitly identified in the payment request. Based upon the received payment request, potentially also including accessing the subscriber profile database 310C, the processor 303 then identifies the payor's funding account (DDA account number) as well as the financial institution 215A-215N at which the DDA



is maintained, step 903. A financial institution 215A-215N is identified based upon the routing number of the payor's FI 215A-215N, preferably stored in the subscriber profile database 310C.

**[0164]** At step 905, based upon the received payment request, the processor 303 identifies the payee. The payee can be, as desired, either explicitly or implicitly identified in the payment request. Next, the processor 303 determines if the payee is a managed payee 210A-210N, step 907. If not, operations continue with step 915, to be discussed below. The determination as to whether the payee is a managed payee is made by the processor 303 accessing the managed payee database 210B and determining if the identified payee is included therein. As desired, the determination could be made according to techniques disclosed in United States Patent Application Serial Number 08/994,047, filed December 19, 1997, entitled "An Electronic Bill Payment System with Merchant Identification", and assigned to the assignee of the present invention.

**[0165]** If the payee is determined to be a managed payee 210A-210N, at step 909 the processor 303 determines if the managed payee 210A-210N is an electronic managed payee. Information identifying whether a managed payee 210A-210N is an electronic managed payee is stored in the managed payee database 210B. If not operations continue with step 915. If so, operations continue with step 911 in which the processor 303 determines if DDA information for the electronic managed payee is included in the managed payee database 210B. As will be understood from the discussion above, some electronic

managed payees do not provide DDA information. If not, operations continue with step 915. If so, operations continue with step 913 in which the processor 303 identifies the payee's DDA (DDA account number) and financial institution 214A-315N (routing number) from the managed payee database 210B.

**[0166]** At step 915 the processor 303 identifies a CSP 207A-207N, if any, with which the payor is associated. An association between a payor (subscriber 203A-203N) and a CSP 207A-207N could be, as desired, stored in the subscriber profile database 310C, or elsewhere. Further, such an association could be, as desired, either implicit or explicit in the received payment request.

**[0167]** At step 917 the processor 303 identifies the product the payor is utilizing. This could be implicit from the received payment request, or could be based upon information stored in the subscriber profile database 310C, or elsewhere. Finally, at step 919 the processor 303 identifies the payment amount, which is explicit in the payment request.

**[0168]** Exemplary operations to assemble the set of debit options and credit options of step 805 are depicted in Figures 10A and 10B. The operations of Figures 10A and 10B constrain, as necessary, the entire set of debit options and credit options shown in Figures 7A, 7B, and 8 available to the service provider 201 based upon product characteristics, CSP 207A-207N preferences, account locations, and/or system defaults.

**[0169]** At step 1001 a service provider processor 303 adds debit options 5B-0, 5B-1, 5B-2, 5B-3, and 6 to a list of available debit options for this payment irrespective of the identified processing context elements. Thus, for all

payments, in this example, all these debit options are available. Also at step 1001 the processor 303 adds credit options 4 and 5 to a list of available credit options for this payment irrespective of the identified processing context elements. Thus, for all payments, in this example, all these credit options are available.

**[0170]** At step 1002 the processor 303, based upon results of the processing shown in Figure 9, determines if the payee has been identified as an electronic managed payee. If so, operations continue with optional step 1003. If not, operations continue with step 1032. At optional step 1003 the processor 303 determines if the payor's account number with the payee conforms to an account scheme and/or range of account numbers of the payee. If this step is performed, it is based upon account scheme and/or range information stored in the managed payee database 210B. As desired, techniques disclosed in United States Patent Application Serial Number 08/994,046, entitled "An Electronic Bill Payment System with Account Number Scheming", and/or United States Patent Number 6,327,577, entitled "An Electronic Bill Payment System with Account Ranging", each filed December 29, 1997 and each assigned to the assignee of the present invention, may be utilized in optional step 1003. If the account scheme and/or range conform, operations continue with step 1004 in which the processor 303 adds credit option 3 to the list of available credit options for this payment.

**[0171]** In step 1005, which follows step 1004, the processor 303 determines if a reversibility agreement exists with the payee, if the payment amount is less than any payee-established limit, and if the payment amount is less than any

service provider-established payee credit amount limit. These determinations are made based upon information preferably stored in the managed payee database 210B, though some or all of the information could be stored elsewhere. If all three conditions are met, operations continue with step 1006, shown in Figure 10B. If not, operations continue with step 1036, discussed further below.

**[0172]** At step 1006 the processor 303 adds debit option 4B to the list of available debit options for this payment. Next, at step 1007 the processor 303 determines if a service provider DDA is maintained at the financial institution 215A-215N at which the payee DDA is maintained. This determination is made based upon results of the processing of Figure 9 and information stored in the service provider DDA database 310D. If so, operations continue with step 1008. If not, operations continue with step 1015, to be discussed further below.

**[0173]** At step 1008 the processor adds debit options 4A, 5A-0, 5A-1, 5A-2, and 5A-3 to this list of available debit options for this payment. Also, the processor 303 adds credit option 2A to the list of available credit options for this payment.

**[0174]** Next, at step 1009, the processor 303 determines if real-time debit authorization is available associated with the current payor's financial institution 215A-215N. This determination is made based upon results of the processing of Figure 9 and information stored in the subscriber profile database 310C, or elsewhere. If so, operations continue with step 1010. If not operations continue with step 1011. At step 1010 the processor 303 adds debit options 1A, 1B, 1C, and 1D to the list of available debit options for this payment.

**[0175]** In step 1011, following either step 1009 or step 1010, the processor 303 determines if batch good funds debiting is available associated with the payor's financial institution 215A-215N. The determination is made based upon information stored in the subscriber profile database 310C, or elsewhere. If so operations continue with step 1012, if not, operations continue with step 1013.

**[0176]** At step 1012 the processor 303 adds debit options 2A, 2B, 2C, and 2D to the list of available debit options for this payment. Operations then continue with step 1013 in which the processor 303 determines if the service provider 201 is associated with a DDA maintained at the financial institution at which the payor's DDA is maintained. This determination is made based upon results of the processing depicted in Figure 9 and information stored in the service provider DDA database 310D. If so, operations continue with step 1014. If not operations continue with step 1040, to be discussed further below. At step 1014 the processor 303 adds debit options 3A and 3B to the list of available debit options for this payment. Also, the processor 303 adds credit options 1A, 1B, and 2B to the list of available credit options for this payment. Operations continue with step 1050, to be discussed further below.

**[0177]** If in step 1007 the processor determines that a service provider DDA is not maintained at the payee's FI 215A-215N, operations continue with step 1015. At this step the processor 303 determines if real-time debit authorization is available in association with the current payor's financial institution 215A-215N, as disclosed above. If so, operations continue with step 1016. If not operations continue with step 1017.

**[0178]** At step 1016 the processor 303 adds debit options 1A and 1B to the list of available debit options for this payment. Operations continue with step 1017 in which the processor 303 determines if batch good funds debiting is available at the payor's FI 215A-215N, as discussed above. If not operations continue with step 1033. If so operations continue with step 1018 in which the processor 303 adds debit options 2A and 2B to the list of available debit options for this payment. Operations then continue with step 1019 in which the processor 303 determines if a service provider DDA is maintained at the payor's FI 215A-215N. If so, operations continue with step 1020. If not operations continue with step 1040, to be discussed further below. At step 1020 the processor adds debit options 3A and 3B to the list of available debit options for this payment and adds credit options 1B to the list of available credit options for this payment. Operations continue with step 1040, to be discussed further below.

**[0179]** If at step 1005 all three conditions are not met, operations continue with step 1036, in which the processor 303 determines if the service provider 201 maintains a DDA at the payee's FI 215A-215N. If not, operations continue with step 1032, to be discussed further below. If so, operations continue with step 1021 in which the processor 303 adds debit options 5A-0, 5A-1, 5A02 and 5A-3 to the list of available debit options for this payment. Also at step 1021 the processor 303 adds credit option 2A to the list of available credit options for this payment.

**[0180]** Following step 1021 the processor 303 determines if real-time debit authorization is available in association with the current payor's financial institution 215A-215N, step 1022. If not operations continue with step 1024. If so operations continue with step 1023 in which the processor 303 adds debit options 1A and 1C to the list of available debit options for this payment.

**[0181]** Operations then continue with step 1024 in which the processor 303 determines if batch good funds debiting is available at the payor's FI 215A-215N. If so, operations continue with step 1025. If not operations continue with step 1026. At step 1025 the processor 303 adds debit options 2A and 2C to the list of available debit options for this payment. Operations then continue with step 1026.

**[0182]** At step 1026, shown in Figure 10B, the processor 303 determines if the service provider 201 is associated with a DDA mentioned at the payors FI 215A-215N. If not, operations continue with step 1040, to be discussed further below. If so, operations continue with step 1027 in which the processor 303 adds debit option 3A to the list of available debit options for this payment. Also, the processor 303 adds credit options 1A, 1B and 2B to the list of available credit options for this payment. Operations continue with step 1040, to be discussed further below.

**[0183]** If at step 1002 it is determined that the payee is not electronic, if at optional step 1003 it is determined that the payor's account scheme and/or range does not conform, or if at step 1036 it is determined that a service provider DDA is not maintained at the payee's FI 215A-215N, operations continue with step

1032. At step 1032 the processor 303 determines if real-time debit authorization is available associated with the current payor's financial institution 215A-215N. If not operations continue with step 1034. If so operations continue with step 1033 in which the processor 303, adds debit option 1A to the list of available debit options for this payment. Operations continue with step 1034 following step 1033.

**[0184]** At step 1034 the processor 303 determines if batch good funds debiting is available at the payor's FI 215A-215N. If not, operations continue with step 1036. If so, operations continue with step 1035 in which the processor 303 adds debit option 2A to the list of available debit options for this payment. Operations continue with step 1039 following step 1035.

**[0185]** At step 1039 the processor 303 determines if the service provider 201 is associated with a DDA at the payor's FI 215A-215N. If not operations continue with step 1040. If so, operations continue with step 1037 in which the processor 303 adds debit option 3A to the available debit options list for this payment, and adds credit options 1B to the lists of available credit options for this payment. It should be noted that credit option 1B is not added if the results of optional step 1003 is negative. Likewise, credit option 1B is not added if the payee is not electronic. Operations continue with step 1040.

**[0186]** Following any of steps 1013, 1014, 1019, 1020, 1026, 1027, 1039, or 1037, the set of possible debit options and possible credit options for this payment have been assembled and operations continue with step 1040. At step 1040 the processor 303 retrieves stored risk, speed and cost preferences for the



current payment. Introduced above, speed and cost preferences may be determined by the payor, service provider 201, or a CSP 207A-207N, whereas risk preference can only be determined by the service provider 201 or a CSP 207A-207N. The operations of step 805 of Figure 8 are now completed.

**[0187]** Figure 11 depicts exemplary operations performed in step 807 of Figure 8 to evaluate the assembled options and select the optimal debit-credit combination. It should be stressed that the operations depicted in Figure 11 are merely exemplary. Other operations to evaluate and select an optimal combination could, as desired, be performed. Additionally, the operations depicted in Figure 11 could, as desired, be performed in a different order than that depicted in Figure 11.

**[0188]** A service provider processor 303 first selects an ordering of priority preferences to utilize in the evaluation and selection. That is, an ordering of speed, risk, and cost preferences is determined. It should again be stressed that payor preferences cannot alter the ordering of risk, either as ordered by a CSP 207A-207N or the service provider 201. In particular, at step 1101 the processor 303 determines if any CSP preference ordering exists. This determination is made based upon if CSP preference information was retrieved at step 1040 of Figures 10A and 10B. If not, operations continue with step 1109. If so, operations continue with step 1103 in which the processor 303 determines if any payor preference ordering exists, based upon the information retrieved at step 1040. If payor preferences exist, operations continue with step 1105 in which the processor 303 selects the payor preferences, in view of the CSP preferences for

use in the evaluation. That is, a CSP's ranking of risk is selected, and the payor's ranking of speed and cost is selected. If payor preferences do not exist, operations continue with step 1113 in which the processor 303 selects the CSP preferences for use in the evaluation.

**[0189]** If at step 1101 it is determined that CSP preferences do not exist operations continue with 1209 in which the processor 303 determines if payor preferences exist, based upon the information retrieved at step 1040. If so, at step 1107 the processor 303 selects the payor preferences, in view of default (system level) preferences, for use in evaluation. That is, the default ranking of risk is utilized, while payor ranking of speed and cost is utilized. If the determination at step 1109 is that payor preferences do not exist, the processor 303 selects default preferences for use in the evaluation, step 1111.

**[0190]** Following any of steps 1105, 1107, 1111, or 1113, operations continue with step 1115 in which the processor 303 identifies all valid debit-credit combinations for the set of assembled options. It will be recognized by one of ordinary skill in the art that not all debit options can be utilized with all credit combinations. The assembly of all valid debit-credit combinations is preferably based upon information included in the debiting options metadata (detail 619, Figures 6A and 6B).

**[0191]** Following identification of all valid debit-credit combinations from the assembled options, the processor 303 selects the first (highest) priority preference for evaluation, step 1117. Then, at step 1119 the processor 303 evaluates each valid debit-credit combination in view of the first priority

preference utilizing the debit option and credit option metadata, shown in Figures 6A, 6B, and 7.

**[0192]** If the first priority preference is risk, the processor 303 accesses the debit option metadata, shown in Figures 6A and 6B and retrieves the risk factor for the debit option of each identified valid debit-credit combination. The processor 303 then orders the retrieved risk factors from lowest value to highest value. The debit-credit combination having the lowest value is identified as the most preferable, and the combination having the highest value is identified as the least preferable with the other ranked in ascending order.

**[0193]** If the first priority preference is cost or speed, the processor 303 accesses both the debit option and the credit option metadata and retrieves the appropriate factor (speed or cost) for both the debit option and the credit option of each identified valid debit-credit combination. The processor 303 sums the retrieved factors. The processor 303 then orders the summed factors from lowest value to highest value. The debit-credit combination having the lowest value is identified as the most preferably, and the combination having the highest value is identified as the least preferable, with the others ranked in ascending order.

**[0194]** At step 1121 the processor 303 determines if one of the evaluated combinations is the best. That is, a determination is made as to whether one combination has a value lower than the others. If so, operations continue with step 1123 in which the processor 303 selects this best combination for execution.

If not, two or more of the combinations have the same value and operations continue with step 1125.

**[0195]** At step 1125 the processor 303 selects the second priority preference for evaluation. Then, at step 1127 the processor 303 evaluates the tied combinations in view of the second priority preference. This evaluation is the same as described above. That is, the processor 303 retrieves the appropriate factors, sums them as necessary, and orders them. At step 1129 the processor 303 determines if one combination is best (has lowest value). If so, operations continue with step 1131 in which the processor 303 selects the best combination (of the previously tied combinations) for execution.

**[0196]** If the second priority evaluation does not result in a best combination, operations continue with step 1133 in which the processor 303 selects the third priority preference for evaluation. At step 1135 the processor 303 evaluates the tied combinations resulting from the evaluation in view of the second priority. The evaluation of step 1135 will be understood from the evaluations described above. At step 1137 the processor 303 determines if one of these combinations is best (has lowest value). If so, operations continue with step 1139 in which the processor 303 selects the best combination (of the tied combinations from evaluation of the second priority preference) for execution. If not, the processor 303 selects any remaining tied combination for execution, step 1141. A variety of tie-breaking rules could be implemented at this stage, as desired.

**[0197]** Following any of steps 1123, 1131, 1139, or 1141, a service provider processor 303 executes a selected debit-credit combination to complete payment

on behalf of the payor to the payee. Execution of the selected combination will be understood from the discussion herein.

**[0198]** The present invention is not to be limited in scope by the specific embodiments described herein. Indeed, various modifications of the present invention, in addition to those described herein, will be apparent to those of skill in the art from the foregoing description and accompanying drawings. Thus, such modifications are intended to fall within the scope of the appended claims.